Claims

1. A composite biomaterial for preventing surgical adhesions of tissue comprised of at least one hyaluronic acid derivative selected from the group consisting of:

(a) a benzyl ester of hyaluronic acid wherein 75 to 100% of the carboxyl groups of hyaluronic acid are esterified with a benzyl radical and up to 25% of the carboxyl groups are esterified with the alkyl radial of a C_{10} to C_{20} aliphatic alcohol, with the proviso that at least 80% of the carboxyl groups are esterified; and

(b) an auto-crosslinked derivative of hyaluronic acid wherein 0.5 to 20% of the carboxyl group of hyaluronic acid are cross-linked to the hydroxyl group of the same or different hyaluronic acid molecule.

2. The composite biomaterial according to claim 1, wherein said derivative is the total benzyl ester in which all of the carboxyl groups of hyaluronic acid are esterified with a benzyl group.

3. The composite biomaterial according to claim 1, wherein said derivative is a benzyl ester wherein 80% of the carboxyl groups are esterified with a benzyl group.

4. The composite material according to claim 1, wherein said derivative is a benzyl ester wherein 75% of the carboxyl groups are esterified with a benzyl group and the remaining 25% carboxyl groups are esterified with the aliphatic residue of a C_{10-20} aliphatic alcohol.

5. The composite material according to claim 4, wherein said alcohol is stearyl or palmitic alcohol.

6. The composite material according to claim 1, wherein said auto-crosslinked derivative has 4.5 to 5.0% of the carboxyl groups of the hyaluronic acid molecule cross-linked.

7. The composite material according to claim 1 which further comprises a non-biodegradable synthetic polymer.

8. The composite material according to claim 7, wherein said synthetic polymer is a member selected from the group consisting of polypropylene, polyethylene, polyester and polytetrafluoroethylene.

9. The composite material according to claim 1 in the form of a membrane, a mesh or a woven or non-woven tissue.

10. The composite biomaterial according to claim 1 in the form of a gel.

11. A method for preventing surgical adhesions of tissue which comprises applying to tissue involved in surgery a biomaterial comprised of at least one hyaluronic acid derivative related from the group consisting of:

(a) a benzyl ester of hyaluronic acid wherein 75 to 100% of the carboxyl groups of hyaluronic acid are esterified with a benzyl radical and up to 25% of the carboxyl groups are esterified with the alkyl radical of a C_{10} to C_{20} aliphatic alcohol, with the proviso that at least 80% of the carboxyl groups are esterified; and

(b) an auto-crosslinked derivative of hyaluronic acid wherein 0.5 to 20% of the carboxyl group of hyaluronic acid are cross-linked to the hydroxyl group of the same or different hyaluronic acid molecule.

12. The method according to claim 11, wherein said derivative is the total benzyl ester in which all of the carboxyl groups of hyaluronic acid are esterified with a benzyl group.

13. The method according to claim 11, wherein said derivative is a benzyl ester wherein 80% of the carboxyl groups are esterified with a benzyl group.

14. The method according to claim 11, wherein said derivative is a benzyl ester wherein 75% of the carboxyl groups are esterified with a benzyl group and the remaining 25% carboxyl groups are esterified with the aliphatic residue of a C_{10-20} aliphatic alcohol.

15. The method according to claim 14, wherein said alcohol is stearyl or palmitic alcohol.

16. The method according to claim 11, wherein said auto-crosslinked derivative has 4.5 to 5.0% of the carboxyl groups of the hyaluronic acid molecule cross-linked.

17. The method according to claim 20 wherein said biomaterial further comprises a non-biodegradable synthetic polymer.

18. The method according to claim 17, wherein said synthetic polymer is a member selected from the group consisting of polypropylene, polyethylene,

polyester and polytetrafluoroethylene.

19. The method according to claim 11, wherein said biomaterial is in the form of a membrane, a mesh or a woven or non-woven tissue.

20. The biomaterial of Claim 1 further comprising a biologically active agent.

21. The biomaterial of claim 20 wherein the biologically active agent is selected from the group consisting of steroidal and non-steroidal antiinflammatories, fibrinolytics, hemostatics, antithrombotics, growth factors, antitumorals, antibacterials, antivirals and antifungals.

22. The biomaterial of claim 10 wherein the viscosity of said gel is at least 200 Pa^{*} Sec^{-1}.

23. The biomaterail of claim 10 wherein the viscosity of said gel is at least 300 Pa^{*} Sec^{-1}.

24. The method of claim 11 wherein said surgery is selected from the group consisting of abdominal, laparoscopic , laparotomic, intestinal, gynecologic, abdominalpelvic, peritoneal, urogenital, orthopedic, spinal/dura mater, tendon/nerve, including carpal tunnel, cardiovascular, thoracic, ophtalmic, oncologic, plastic, esthetic, ENT, paranasal sinuses, and transplantation.